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FLORIDA DEPARTMENT OF STATE
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FLORIDA DEPARTMENT OF STATE
Sandra B. Mortham
Secretary of State
DIVISION OF HISTORICAL RESOURCES

October 21, 1997

Mr. Dennis R. Duke
Planning Division, Environmental Branch
Jacksonville District Corps of Engineers
P. O. Box 4970
Jacksonville, Florida 32232-0019

In Reply Refer To:
Robin D. Jackson
Historic Sites Specialist
Project File No. 973675

RE: Cultural Resource Assessment Request
Submerged Historic Properties Survey, Nassau County Shore Protection Project.
By Mid-Atlantic Technology and Environmental Research, Inc., July 14, 1997

Dear Mr. Salem:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), we have reviewed the results of the referenced project and find them to be sufficient. Please have a survey log sheet (enclosed) filled out for the above report and forwarded to this office in order to make the report complete.

Based on the information provided in the above report and your letter of July 25, 1997, we note that 22 magnetic targets were located as a result of the above survey. Of these, ten of the magnetic and sonar targets are not considered significant. Buffer zones are not recommended for these. In the South Borrow Area, seven targets (15-21) may be significant. We note that a 300 foot "no effect" buffer zone will be maintained around each target. In the South Entrance Channel Borrow Area, five targets (6, 8, 10, 13, and 14) may be significant. We note that 300 foot radius "no effect" buffer zones will be established around these targets too. If it is later determined that one or more targets cannot be avoided, then diver investigations will be conducted in coordination with our office.

DIRECTOR'S OFFICE
R.A. Gray Building • 500 South Bronough Street • Tallahassee, Florida 32399-0250 • (850) 488-1480
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❐ ARCHAEOLOGICAL RESEARCH (850) 487-2299 • FAX: 414-2207
❐ HISTORIC PRESERVATION (850) 487-2333 • FAX: 922-0496
❐ HISTORICAL MUSEUMS (850) 488-1484 • FAX: 921-2503

We concur with the above recommendations and conclusions. If the above conditions are met, it is the opinion of this office that the proposed project will have no effect on sites listed, or eligible for listing, in the *National Register of Historic Places*. If you have any questions concerning our comments, please do not hesitate to contact us. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Laura A. Kammerer for

George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Jrj

APPENDIX D-SECTION 103 EVALUATION

Oon FV

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

DEC 1 7 1998

4WM-WCWQ

Mr. Richard E. Bonner, P.E.
Deputy District Engineer
for Project Management
Department of the Army
Jacksonville District Corps of Engineers
P.O Box 4970
Jacksonville, Florida 32232-0019

Dear Mr Bonner:

We have received your submittals, dated August 12, 1997, and August 5, 1998, requesting a three year concurrence for ocean disposal of dredged material from the Fernandina Inner Channel and Turning Basin, and from the Kings Bay Naval Submarine Base Entrance Channel, into the Fernandina Ocean Dredged Material Disposal Site (ODMDS).

Based on the information provided we concur that, in accordance with MPRSA and the criteria published in 40 CFR Parts 220-228, the proposed dredged material from the project areas is suitable for ocean disposal in the Fernandina ODMDS. This concurrence applies only to the following specific project segments:

> **Fernandina Inner Channel and Turning Basin** - (approximately 90,000 cy per year) project segments identified as Cut-1 through Cut-5, and a portion of Cut-6 (to Station 9+00). ***(The remainder of Cut-6, and Cut-6A through Cut-10 have not been adequately characterized and evaluated, and therefore are specifically excluded from this concurrence, and are not to be included in the proposed dredge project)***;
>
> **Kings Bay Naval Submarine Base Entrance Channel** - (Permit 199201854)(up to 1,000,000 cy per year) project segments identified as the Georgia portion of the Kings Bay Entrance Channel from stations **0+000 to 30+000**, and the Florida portion from stations **0+00 (Cut 1N) to 250+00 (Cut 2N)**.

This concurrence is valid for a three year period from the date of this letter. Please note that there is a Site Management and Monitoring Plan (SMMP) for the Fernandina ODMDS, and that permitted and Civil Works projects utilizing the Fernandina ODMDS must be in compliance with the conditions in the SMMP. Additionally, we request written notification of project dredging start and end dates, and request project summaries at the completion of each dredging cycle. We also request written notification if the estimated dredged material volumes will be or are exceeded.

For future planning purposes, please note there will be no two year extension applicable to this concurrence, and a new MPRSA Section 103 evaluation will be required for all project segments before a new 103 concurrence can be issued at that time. Please coordinate all sampling and analyses requirements with our office before conducting any sampling and testing, and before beginning preparation of the 103 Evaluation. We suggest a planning meeting be scheduled at least 18 months in advance of the expiration date of this concurrence.

If you have any questions regarding this letter, please contact Doug Johnson at 404-562-9386.

Sincerely,

Thomas C. Welborn, Chief
Wetlands, Coastal, and Water
Quality Branch

KINGS BAY ENTRANCE CHANNEL
SECTION 103 OCEAN DISPOSAL EVALUATION REPORT

I. **Description of Action.** This report is the chemical and biological evaluation of potential dredged material (DM) from the Kings Bay/Trident Submarine Base entrance channel maintenance project. The project includes the entrance channel between Amelia Island, Florida, and Cumberland Island, Georgia, more correctly known as the St. Marys Entrance, a portion of the St. Marys River, the section of the Intracoastal Waterway (IWW) north of the St. Marys River passing into Georgia to Kings Bays, and the U. S. Navy Trident submarine base at Kings Bay. That portion of the project that lies within the State of Georgia is maintained by the Savannah District of the U. S. Army Corps of Engineers, and that part of the project within the State of Florida is maintained by the Jacksonville District. This work was done in accordance with the Environmental Protection Agency (EPA)/ U. S. Army Corps of Engineers (Corps) joint publication, Evaluation of Dredged Material Proposed for Ocean Disposal (Testing Manual), dated February 1991, referred to as the 1991 Green Book.

II. **Description of the Disposal Site.** The proposed disposal site is the Fernandina Ocean Dredged Material Disposal Site (ODMDS). This site is located approximately seven miles offshore of Amelia Island and 10 miles south of the St. Marys Entrance. It has been designated for the disposal of dredged material by the U. S. Environmental Protection Agency (EPA). The site is two and a half miles square with center coordinates of 30°32'00"N latitude, and 81°18'00"W longitude. The water at the site is approximately 50 feet deep. A map showing the ODMDS can be found on page 2-2 of Volume I, of the Final Consolidated Report for Obtaining and Analyzing Sediment Samples, Water Samples, and Bioassay Samples from Kings Bay Entrance Channel. (hereafter called the "Final Report", copy enclosed).

III. **Description of Dredged Material.** Bottom sediments differ through the length of this project. In Kings Bay, the site of the Trident base, material is described from core borings as dark grey silty fine sand, dark brown silt, dark brown slightly sandy silt, and dark brown very sandy silt. In the IWW and St. Marys River, sediments are brown fine sand, slightly silty brown sand, and brown fine sand with shell. In the entrance channel itself, some stations were found that were described as brown very sandy silt, or as sandy silt with shells. Sieve analysis and grain size distribution data is contained in the Appendix B, Volume II of the Final Report.

Through several agreements involving the State of Florida, the U. S. Navy, and the U. S. Army Corps of Engineers, beach quality material (generally defined by the State of Florida as having 10% or less silt or clay) from that portion of the project that lies within Florida waters will be placed on the beach at Amelia Island, south of the St. Marys Entrance. Other material is planned for upland disposal if available, or disposal in the Fernandina ODMDS.

IV. **Environmental Testing Results.** This evaluation started with an initial reconnaissance of 26 sediments samples taken at 26 stations beginning at the Trident submarine base at Kings Bay and extending the length of the project to include the entrance channel. Stations were numbered E-KB92-1 through 26 beginning at Kings Bay (hereafter referred to in this report as sample stations 1-26). The initial 26 samples were analyzed for grain size and settling rate only. Then, in conjunction with EPA, Region IV, the stations that proved to be mostly sand were excluded from further testing and the 10 stations with high silt content were resampled and tested as described below (see map, Final Report, Vol. I, page 2-2). Five reference stations in proximity to, but upstream from, the ODMDS, were also sampled . Upstream was determined by the general north to south flow of the longshore currents on the Atlantic coast of North America. The reference stations were numbered RS-KB92-A to E, hereafter referred to in this report as reference stations A-E.

Samples from all 15 stations and a control were subjected to chemical analysis of sediments and elutriates, bioassays of sediments and elutriates, and tissue analysis of animals exposed to the sediments to determine bioaccumulation potential. Methods used are detailed in Section 2.0, Methods and Materials, of the Final Report, Vol. I. The results of these analyses are presented in Section 3.0, Results and Discussion, of the Final Report, Vol. I. Analytical results are further reviewed below as appropriate.

a. Sediment Analysis.

(1) Heavy metals. Metals analysis results are displayed in table 4, pages 3-6 to 3-8, of the Final Report, Vol. I. Levels of heavy metals in the sediments varied between stations. Some were slightly elevated relative to the reference stations. However, none appear to be elevated above expected levels for marine sediments, nor do any of the levels reported appear to be cause for concern in view of the dilution of the dredged material and its effluent, and the characteristic of fine grained sediments to retain adsorbed metals. The following comments on specific metals are offered.

(a) Aluminum (Al). Al is of interest primarily as it relates to the clay content of sediment and the levels of other metals in that sediment. High levels of aluminum indicate high clay content, smaller grain size, and a higher potential to attract and adsorb other metals. Stations 24, 25, and 26 all show high Al content, averaging 19,400, 17,600, and 20,000 ppm dry weight respectively (all values in this report are expressed as dry weight, unless inappropriate or noted otherwise). Al levels in sediment from the five Kings Bay samples were markedly different, none being over 50.1 ppm.

(b) Arsenic (As). The amount of As detected in sediment samples for all sample stations and the reference stations is compatible with expected values for oceanic sediment which range in value from <0.4 to 455 ppm (NRCC, 1978). The highest value observed of 9.4 ppm at both stations 24 and 25, is well within limits expected for As in oceanic sediments.

(c) Cadmium (Cd). Reported background levels of Cd range up to 1 ppm in uncontaminated marine sediments (Korte, 1983). Only a few stations had Cd above the detection limit of 0.1 ppm, and none exceed 0.2 ppm.

(d) Chromium (Cr). Rehm et al (1984) reported concentrations of Cr in sediments ranging from 3.9 ppm in intertidal sand to 162 ppm in anaerobic mud.

All Cr values reported in this study fall within the range reported by Rehm et al (1984), however, examining the Cr data from this project, it is obvious that stations 1-5 and 24-26 have significantly higher Cr levels than the reference stations, and sample stations 9 and 11. The explanation of this variation in Cr content seems to be related to differences in sediment characteristics.

Stations 24-26 show much higher iron (Fe) content than other sample and reference stations. The total organic carbon levels are also higher at sample stations 24-26 than at samples stations 9 and 11 and the reference stations. Rehm et al (1984) reported Cr concentrations in sediment varied directly with the iron (Fe) and organic content, and indirectly with grain size. If grain size is considered for this data, a relationship can be seen between smaller grain size and increased Cr levels. Lastly, as noted in paragraph IV,a,(1),(a) above, stations 24-26 have high aluminum levels indicating high clay content, small grain size and higher levels of adsorbed metals. All of these factors can result in naturally higher Cr levels in sediments.

Sample stations 9 and 11 and the five reference stations, which had much lower Cr values than samples stations 24-26 have the opposite characteristics, ie, low Fe levels, low Al levels, and, for sample stations 9 and 11, larger grain size (grain size for the reference stations is not available).

Sediments from sample stations 1-5 have some of the conditions necessary for high natural Cr levels, those being small grain size, and high organic content. However, these stations are low in Fe and Al. Since stations 1-5 have a higher Cr level with fewer of the factors that cause elevated Cr, the Kings Bay stations may reflect some low level Cr contamination.

(e) Copper (Cu). Judged primarily by comparison to references station values and considering the relatively low toxicity of Cu, the values displayed in table 4 of the Final Report, Vol I are not abnormal or of concern.

(f) Iron (Fe). Fe content is of interest primarily as a way of interpreting the levels of other elements in the sediment. Iron levels are significantly higher at stations 24-26 than other stations.

(g) Lead (Pb). Pb in deep ocean sediments can vary from less than 10 to more than 80 ppm (Demayo et al., 1982), and Pb concentrations have been recorded at 110 ppm in an unpolluted lake (Haux et al., 1986). Pb levels in roadside soil are commonly in the range of 500 ppm two meters from roadways and over 100 ppm 40 meters from roadways (Krishnayya and Bedi, 1986). Given these bench marks, the Pb levels at station 25, which averaged 10.1 ppm, cannot be considered to be other than natural background levels.

(h) Mercury (Hg). Mercury levels are all low with the highest level not exceeding 0.5 ppm. As reported by NAS (1978) uncontaminated sediment usually has concentrations of <1.0 ppm.

(i) Silver (Ag), and Nickel (Ni). Based on the relatively low toxicity of Ag and Ni, and the low levels of these metals in the samples, which are in general similar to the reference station values, there is nothing remarkable demonstrated in these results. No adverse environmental impacts can be expected by the ocean disposal of the sediment due to the presence of Ag, or Ni.

(j) Zinc (Zn). Zn levels are not remarkable and Zn is not a highly toxic metal. Levels at stations 24-26 are about four times the reference station average, but this is probably a reflection of smaller grain size and the higher Al content of these samples when compared to the references stations, indicating a higher potential of the sediments at stations 24-26 to adsorb metals. Sample stations 1 and 2 have higher Zn levels that the other Kings Bay stations, and sample station 1 has the highest level of any station tested (55.8 ppm). These levels may reflect an anthropogenic in origin.

(2) Nutrients, Pesticides, PCBs, PAHs and Phenols. No notable concentrations of nutrients were noted. No pesticides, PCBs, PAHs, or phenolic compounds were detected in sediments from any station (Final Report, Vol. I, tables 5-8A).

(3) Polychlorinated dibenzo-para-dioxin (PCDDs). PCDDs, or dioxin, analysis was conducted on sediments from two sample stations, 11 and 26, by agreement with EPA, Region IV. A detection limit of 1 ppt (ng/kg) was used. Data is displayed in the Final Report, Vol. I, table 8B, pages 3-14. Most isomers were not found at the detection limit. The isomer 2,3,7,8 tetrachlorodibenzo-para-dioxin (TCDF), the most toxic PCDD

isomer, was identified at 3.2 ppt at station 11 and 17.6 ppt and station 24. However, a risk analysis indicates that these levels are not significant.

b. Elutriate Analysis. The metals As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, and Zn were either not detected or were not detected at elevated levels. No pesticides or PCBs, PAHs, or phenolic compounds were detected except for two phenols detected at station 26 at insignificant levels (Final Report, Vol. I, tables 9-13).

c. Bioassays. Bioassays were conducted on elutriates of sediments and sediments from all samples and reference stations.

(1) Elutriate Bioassays. Elutrite bioassays were run for 96 hours using <u>Mysidopsis</u> <u>bahia</u>, and <u>Menidia</u> <u>beryllina.</u> A fertilization test using sea urchin eggs (<u>Strongylocentrotus</u> <u>purpuratus</u>) was also conducted. Tests for all three species were conducted in 0, 10, 50 and 100 percent concentration of elutrite. Evaluation of the results of these tests is performed using the Automated Dredging and Disposal Alternatives Management System (ADDAMS) model to predict dilution at the disposal site and determine if disposal of the DM will exceed the limiting permissible concentration (LPC). The results of this testing are presented in tables 14-16 of the Final Report, Vol I, beginning on pages 3-21. <u>Mysidopsis</u> <u>bahia</u> and <u>Menidia</u> <u>beryllina</u> results were obviously adequate and no ADDAMS analysis was conducted. <u>Strongylocentrotus</u> <u>purpuratus</u> had several stations (3 and 4 in Kings Bay) where mortality was high enough to justify an ADDAMS analysis. However, as will been explained below, the removal of the Kings Bay material from consideration for ocean disposal based on sediment bioassays eliminated the need for further elutriate bioassay analysis and the ADDAMS model analysis was not performed.

(2) Sediment bioassays were conducted using two species, <u>Mysidopsis</u> <u>bahia</u> and <u>Ampelisca</u> <u>abdita</u>. The results of the testing are presented in tables 20-22 beginning on pages 3-35 of the Final Report, Vol. I. The results of the bioassays were evaluated by comparing the mortality of each species at each sample station to the average of mortality of the species at the five reference stations.

In accordance with the 1991 Green Book, if the mortality for <u>Mysidopsis</u> <u>bahia</u> exceeds the reference station by more than 10% and the data is statistically significant, the sediment does not meet the criteria for ocean disposal. The sediment bioassays produced a reference station mortality of 18.4%. All sample stations had mortality results that were less than the reference average and therefore all sample stations meet or exceed the criteria for ocean disposal based on the <u>Mysidopsis</u> <u>bahia</u> bioassays.

In accordance with the 1991 Green Book, if the mortality for

Ampelisca abdita exceeds the reference station by more than 20% and the data is statistically significant, the sediment does not meet the criteria for ocean disposal. The sediment bioassays produced a reference station mortality of 8.8%. Mortality at stations 1,2,3,4, and 5 in Kings Bay all exceeded the reference station average by more than 20%. Sample station 2 was not statistically significant. Sample stations 9, 11, 25, and 26 were all within the standard. Station 24 had a mortality 65%, or 56.2% below the reference station average. However, based on a review of other data, we do not considered this value to be valid. This is discussed in detail in paragraph VIII below.

d. Bioaccumulation tests were performed using two species, the clam *Macoma nasuta* and the annelid worm *Nereis virens.* The tests were run for 28-days. Background samples, animals selected from the batch of test organisms used for the test, but not exposed to the test sediments, were also analyzed.

(1) Heavy Metals

(a) Arsenic. The highest value recorded for As was 39.7 ppm recorded in the background sample for *Macoma*. The highest value observed for a sample station was 38.1 ppm for *Macoma* at station 3. Arsenic is a naturally occurring element in living tissue and levels of more than 100 ppm dry weight occur in marine organisms and present little hazard to the organism or to its consumers (Lunde, 1977).

(b) Cadmium. Cd levels were higher in *Macoma* than in *Nereis*, which is the normal occurrence, but did not exceed 0.9 ppm. This is in line with expected levels obtained from marine bivalves (Ratkowsy et al, 1974; Kopfler and Mayer, 1967).

(c) Chromium. Cr values were not significant. The highest value was recorded from a reference station sample at 10.6 ppm. The highest value found at a sample station was 5.7 ppm. In mussels from unpolluted environments, Korbe et al. (1977) has reported tissue concentrations of Cr ranging from 0.4 to 21.0 ppm. Phelps et al. (1975) reported Cr content as high as 24.7 ppm in soft parts of the clam *Mercenaria mercenaria*. Cr values do not appear to be a cause for concern.

(d) Copper. Tissue concentrations of Cu differed little between the two species tested. Most sample station results not significantly different than the reference station or background values. Higher values were reported at station 25 for *Nereis* of 30 ppm and 13 ppm for *Macoma* at station 11. However, there is no correlation between stations and the two species. Considering the low toxicity of Cu and its natural abundance in marine species, there is little significance to these values.

(e) Lead. Pb values were higher in *Macoma* than in *Nereis*, however all Pb levels in *Macoma* were below the level of the background (3.8 ppm). Reference stations had the next highest levels (3.6 ppm at two stations). Sample stations ranged from 0.8 to 3.6 ppm. These values are not remarkable and are close to values reported by Graham (1972) for limpets from Pb free areas in California (8 ppm) and values reported for bivalves from the Chesapeake Bay by Di Giulio and Scanlon (1985), which averaged 5 ppm and ranged from 0.6 to 27 ppm.

(f) Mercury. Mercury values are all below the detection limit of 0.2 ppm. Keep in mind that this data is reported as a dry weight value. The U. S. Food and Drug Administration (FDA) warning levels for mercury in fish fillets start at 1.0 ppm wet weight of mercury (reduced consumption for adults/no consumption for children, and pregnant/lactating women). Wet weight values are generally four or five times less than dry weight values. Mercury in the tissues of animals used in this study did not approach this limit.

(g) Nickel. Nickel levels do not significantly exceed the background levels or reference station levels.

(h) Silver. Tissue concentrations of silver were all at or near the detection limit.

(i) Zinc. Tissue concentrations of zinc do not greatly exceed the background level or the reference station average. These low levels, the low toxicity of zinc, and its known biological function, indicate that Zn does not pose any threat to biota through bioaccumulation.

(2) Pesticides and PCB's. All pesticides and all PCBs were at or below the detection limits.

(3) Phenols. With the exception of Pentachlorophenol (PCP), all tests for phenols were at or below the detection limits. PCP was reported in all tissues at very high levels. PCP, used as a wood preservative and in other biocide roles, is very nearly ubiquitous in the environment. PCP contaminated air, precipitation, surface and groundwater, drinking water, and aquatic organisms are common (Pignatello, 1983, Choudhury et al., 1986). PCP bioaccumulates readily in some organisms. Fox and Joshi (1984) found PCP could bioaccumulate in fish up to 10,000 times the level in the aquatic environment.

However, while PCP is common in the environment and bioaccumulates, the values reported in the Final Report are extraordinarily high, ranging to 1,000 ppm. Folke and Birklund (1986) reported values for <u>Mytilus edulis</u> in Denmark at 32 to 244 ppb. Note that Folke and Birklund reported parts per billion versus the parts per million values found in this study. Values in freshwater organisms reported by other researchers are also in the parts per billion range. Since the values reported here are three orders of magnitude higher than values reported in the peer review literature, this data is suspect and is probably invalid.

This is supported by the fact that the control sediment tissue, background tissue, and five replicates of tissues exposed to reference station sediments all showed similarly high PCP values. The laboratory performing the chemical analysis of tissues for organics used gas chromatography. Their personnel report that this method can produce false positives. This is presumed to be the reason for the oddly high levels of PCP reported from this analysis.

It should also be noted that even if the sediment were contaminated with PCP, PCP degrades quickly in the environment due to microbial and photochemical action (Kaufman 1978; Choudhury et al. 1988). The half life of PCP in soil is 15 to 60 days and in marine sediments it degrades rapidly in increased oxygen levels and pH levels above 8.0 (DeLaune et al, 1983). Bevenue and Beckman, 1967; Wong and Crosby, 1978; Boyle et al., 1980; Niimi and Cho, 1983; Crossland and Wolff, 1985; and Smith et al, 1987, reported the half life of PCP in water ranged from .15 to 15 days. Testing done near the ODMDS reported bottom conditions with dissolved oxygen above 7.4 ppm and pH values above 8.0. It is reasonable to expect any PCP present in sediments to degrade rapidly at the ODMDS and not to impact the food web.

V. **General Compatibility of Dredged Material with Disposal Site.** Data displayed in Appendix B shows that DM likely to be disposed at the ODMDS is sand and silt with traces of shell. Comparisons with the EIS data for the ODMDS shows that the dredged material is physically compatible with the material at the disposal site.

VI. **Need for Ocean Disposal.** Substantial amount of dredged material from this project can and will go to upland sites. This is relevant to the material from Kings Bay and parts of the IWW in Georgia, for which the Navy has upland disposal sites available.

Some material that is beach compatible will be used for beach nourishment on the beach or in near shore disposal areas at Amelia Island.

Material from the southern reach of the IWW (Station 9 and south) that is not beach compatible needs to be disposed of in the ODMDS. Upland disposal sites are not available near the St. Marys Entrance and transport of DM to upland sites near Kings Bay would not be economically feasible. Also, material suitable for disposal in the ODMDS from the IWW near Kings Bay, might be disposed of in the ODMDS to save upland disposal space for DM unsuitable for ocean disposal.

VII. **Environmental Impacts of Disposal.**

a. Aesthetics. The location and the distance off shore should minimize the adverse aesthetics impact of turbidity during discharge.

b. Recreation Resources. No adverse impacts are expected.

c. Commercial marine resources. No commercial fishery or resources would be affected.

d. Navigation. No adverse impacts are expected.

e. Mineral resources. No adverse impacts are expected.

f. Cultural resources. No adverse impacts are expected.

g. Endangered species. No adverse impacts are expected.

h. Water quality. There will be a temporary increase in turbidity during discharge operations. This turbidity will be short lived and limiting permissible concentrations of contaminants will not be exceeded.

VIII. **Determination and findings.** The majority of the material from this project is suitable for ocean disposal. The material from Kings Bay, ie., the trident submarine base basin itself, tested at stations 1-5, is not suitable or is marginally suitable for ocean disposal. Therefore, the area from station 48, at the north end of Kings Bay southeast to station 38, at the south end of Kings Bay, is withdrawn from this request for concurrence for ocean disposal. Of the rest of the material, we believe that all potential dredged material in the IWW, St Marys River and the entrance channel is suitable for ocean disposal. With the exception of sample station 24, no sample station evaluated was in conflict with the guidance of the 1991 Green Book. Sample station 24 had a lower than acceptable survivorship for *Ampelisca abdita* at 35% which is 56.2% below the reference station average. However, we believe that this an artifact of the testing procedure and not a valid result suggesting potential impact to the marine environment. Our reasons for this position are as follows:

a. The similarities between station 24 and nearby stations 25 and 26 are obvious. The sediments are the same and there are no significant analytical differences between these stations, yet 25 and 26 had sediment bioassays survival values of 76% and 73%.

b. There is no chemical data that indicates that there is any significant contamination in sediment from station 24.

c. All the elutriate bioassays are well above criteria.

d. Sediment bioassays for *Mysidopsis Bahia* at station 24 are acceptable. *Mysidopsis bahia* had a survival rate of 95% at station 24, 13.4% *above* the reference station average.

Based on this evaluation, the Jacksonville and Savannah Districts of the U. S. Army Corps of Engineers propose to issue to the U.

S. Navy, a permit to transport dredged material from this project beginning south of station 38 (see map attached) and including the IWW and St. Marys Entrance, to the Fernandina ODMDS for ocean disposal as described in paragraph I above. Exceptions to this will include the use of beach or nearshore disposal for suitable material, or where available, upland disposal of some material.

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